CNTF, PDGF, NGF, NT-3, NT-4, and sonic hedgehog.

REMARKS

The amendment in the specification, at page 10, lines 1-15, is for greater clarity; Applicant has italicized titles of cited journal articles, to differentiate them from the text of the paragraph, and has deitalicized journal names; Applicant has also substituted commas for periods within citations, substituted "*et al.*" for multiple author names, and moved citation dates to the end of citations to reduce confusion with the text of the paragraph.

With respect to the claim amendments, Applicant respectfully requests the Examiner to refer to Applicant's remarks concerning the pending Office Action (mailed November 8, 2000) in Applicant's Response to Office Action, which Applicant mailed on March 21, 2001.

In view of the above amendments and Applicant's remarks in the Response to Office Action, which Applicant mailed on March 21, 2001, it is submitted that this application is now ready for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (213) 896-6665.

Respectfully submitted,

By: _____

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Version with Markings to Show Changes Made

In the Specification:

Please delete page 10, lines 1-15, in their entirety, and insert therefor:

--Helix-Loop-Helix (bHLH)[ ]and Zinc-finger transcription factors results in conversion of non-determined ectoderm into neuronal tissue. Additionally, forced expression of bHLH transcription factors, NeuroD1, NeuroD2 (Lee, J.E., *et al.*, [Hollenberg, S.M., Snider, L., Turner, D.L., Lipnick, N. and Weintraub, H. (1995).] Conversion of Xenopus ectoderm into neurons by neuroD, a basic helix-loop-helix protein[.], *Science* 268, 836-844 [1995]; McCormick, M.B. *et al.*, [Tamimi, R.M., Snider, L., Asakura, A., Bergstrom, D., and Tapscott, S.J.(1996).] NeuroD2 and NeuroD3: distinct expression patterns and transcriptional activation potentials within the neuroD gene family[.], *Mol. Cell. Biol.* 16, 5792-5800 [1996]), or neurogenin 1 (Ma, Q. *et al.*,[Kintener, C., and Anderson, D.J. (1996)] Identification of neurogenein, a vertebrate neuronal determination gene[.], *Cell* 87, 43-52 [1996][; McCormick et al., 1996]), or Zinc-finger transcription factors MyT1 (Bellefroid, E.J. *et al.*, [Bourguignon, C. Holleman, T., Ma, Q., Anderson, D.J., Kintner, C., and Pieler, T. 1996.] X-MyT1, a Xenopus C2HC-type zinc finger protein with a regulatory function in neuronal differentiation[.], *Cell* 87, 1191-1202[.] [1996])[,] or Zic3 (Nakata et al., [1997]), results in induction of additional neurogenic transcription factors and initiation of neuronal differentiation of amphibian ectodermal cells.--.

In the claims:

Please amend Claims 1, 2, and 11 as follows:

1. (Amended) A method of transdifferentiating an epidermal basal cell into a cell having one or more morphological, physiological and/or immunological feature(s) of a neural progenitor, neuronal, or glial cell, comprising:

(a) culturing a proliferating epidermal basal cell population comprising one or more epidermal basal cell(s), said cell(s) derived from the skin of a mammalian subject;

(b) transfecting said epidermal basal cell, in vitro, with one or more eukaryotic

expression vector(s) containing at least one cDNA encoding a human neurogenic transcription factor, or homologous non-human counterpart, or active fragment(s) thereof, from the group consisting of NeuroD1, NeuroD2, ASH1, Zic1, Zic3, and MyT1, such that at least one of the neurogenic transcription factor(s) is expressed in said cell;

(c) growing the transfected cell in the presence of at least one antisense oligonucleotide comprising a segment of a human MSX1 gene and/or human HES1 gene, or homologous non-human counterpart of either of these, [thereby suppressing] in an amount sufficient to suppress the expression of functional MSX1 gene product and/or HES1 gene product [at least one negative regulator of neuronal differentiation]; and, optionally,

(d) growing said epidermal cell with a retinoid and at least one neurotrophin selected from the group consisting of BDNF, CNTF, PDGF, NGF, NT-3, NT-4, sonic hedgehog, and active fragments of any of these, or a cytokine comprising IL-6, whereby the cell is transdifferentiated into a cell having one or more morphological, physiological and/or immunological feature(s) of a neural progenitor, neuronal, or glial cell.

2. (Amended) The method of Claim 1, wherein the eukaryotic expression vector(s) of the transfection step comprise a CMV promoter sequence operatively linked to a DNA(s) encoding the neurogenic transcription factor selected from the group consisting of NeuroD1, NeuroD2, ASH1, Zic1, Zic3, and MyT1, and wherein the DNA encoding the neurogenic transcription factor is of human origin or is a homologous non-human counterpart, or is an active fragment of a gene encoding any of these.

11. (Amended) A kit for converting epidermal basal cells [to cells] into cells having one or more morphological, physiological and/or immunological feature(s) of a neural progenitor, neuronal, or glial cell, said kit comprising:

(A) one or more eukaryotic expression vector(s) containing cDNA encoding a neurogenic transcription factor, or fragment thereof, from the group consisting of NeuroD1, NeuroD2, ASH1, Zic1, Zic3, and MyT1, or a non-human homologous counterpart of any of these;

(B) at least one antisense oligonucleotide corresponding to the human MSX1 gene , the human HES1 gene, or a non-human homologous counterpart of either of these; and

(C) a retinoid and at least one neurotrophin from the group consisting of BDNF, CNTF, PDGF, NGF, NT-3, NT-4, and sonic hedgehog.